

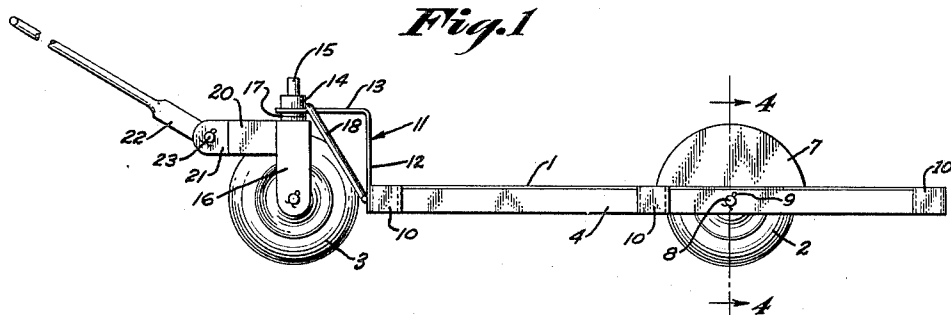
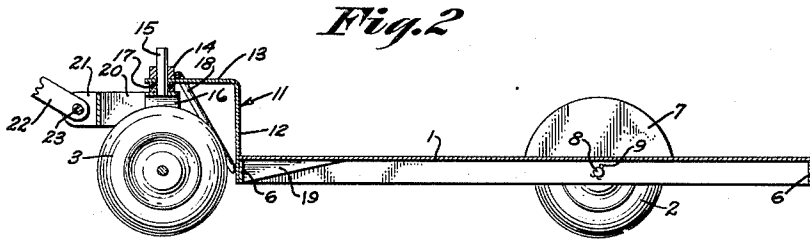
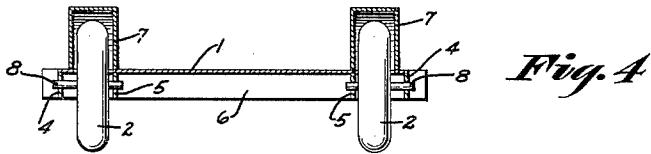
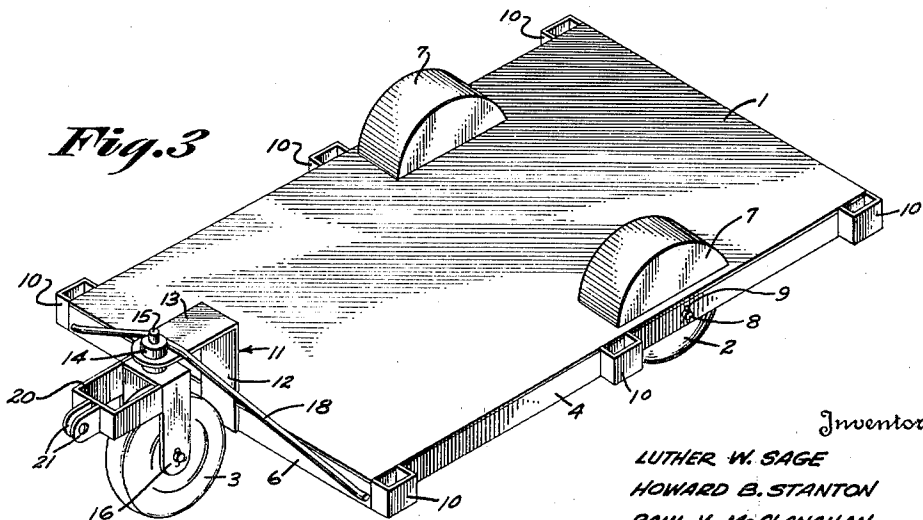
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L. W. SAGE ET AL

2,505,583

MINE CAR

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Inventor

LUTHER W. SAGE
HOWARD B. STANTON
PAUL V. McCLANAHAN

By *Wm. Fenwick & Lawrence*
Attorneys

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2,505,583

MINE CAR

Luther W. Sage, Grundy, Howard B. Stanton, Richlands, and Paul V. McClanahan, Grundy, Va.

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1 Claim. (Cl. 280—62)

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This invention relates to mine cars, and more particularly to such cars which may be used without rails.

In mining, it has long been the practice to install a railed track and use a car having four flanged wheels upon the track for hauling the mined material from the tunnel. In coal mining particularly this practice has been followed even in small operations where the tunnel extends but a short distance into the earth and the tunnel floor is substantially horizontal. The floors of such tunnels are usually quite hard and relatively smooth, and readily adaptable for use as a roadbed. The cost of steel rails and their installation is quite high and if their use can be avoided it will result in a substantial saving to the mine operator. The use of steel rails and flanged-wheel cars has long been recognized as a hazard, and many explosions have resulted from sparks from the car wheels.

The object of the present invention is to provide a mine car which is adapted for use without rails, and which can readily be drawn from the tunnel to any desired point of delivery.

Another object of the invention is to provide such a car with but three wheels; with the front single wheel capable of being turned for steering and yet have the car bed sufficiently low to permit the carrying of a normal load without interference from the usual low ceiling of the mine tunnel.

A further object of the invention is the provision of novel means for mounting the front wheel centrally of the vehicle and providing for unbalanced loads to prevent tipping of the car.

A still further object of the invention is to provide a car of this type having pneumatic tires with the wheels so mounted as to be readily demountable for changing tires.

Another object is the provision of such a car in which the rear wheels are positioned to support the bulk of the weight of the car and load so that the front wheel will support but a small portion of the load and be readily movable for steering.

Other objects will become apparent from the following description of one embodiment of the invention when taken in conjunction with the drawings which accompany and form a part of this specification.

In the drawings:

Figure 1 is a side elevation of a mine car embodying the principles of the present invention;

Figure 2 is a vertical longitudinal section through the car shown in Figure 1;

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Figure 3 is a perspective view of the car; and, Figure 4 is a vertical transverse section at the rear wheels taken on the line 4—4 of Figure 1.

Referring to the drawings in detail, the car comprises a flat bed 1 supported upon two rear wheels 2 and a front caster wheel 3.

Bed 1 is provided with two pairs of longitudinally extending sills 4 and 5, the sills 4 being substantially flush with the side edges of the bed plate and forming the side rails of the bed, and sills 5 being parallel to and spaced from side rails 4. Transverse stiffening rails 6 are positioned at the front and rear of the bed plate to complete the bracing.

Between each pair of sills 4 and 5, the bed plate is recessed upwardly to form wheel wells 7 into which the upper portions of rear wheels 2 extend. The rear wheels are journaled upon short individual axles 8, each axle having its ends supported in a pair of the sills 4 and 5. In other words, each axle is placed through an opening in one of the sills 4, through the rear wheel 2 it is to support, and through a similar opening in the adjacent sill 5. Cotter pins 9 are put through the ends of the axle to bear against the sills 4 and 5 to hold the axle in place. This positions the wheel between the sills 4 and 5 with its upper portion extending in a wheel well 7. The provision of the wheel wells permits the wheels to be journaled at a point closely adjacent the car bed plate bringing the bed plate close to the ground. To demount the wheel it is simply necessary to draw out the inner cotter pin 9 and pull out the axle. A new wheel may be mounted as simply.

At spaced points along side rails 4, sockets 10 are secured, into which stakes to support body side members may be placed. The side members per se form no part of the present invention and, therefore, have not been illustrated. It will be noted that the wheel wells 7 are spaced inwardly from the side edges of the bed plate a sufficient distance to permit side members to drop to the floor level of the bed plate.

A bracket 11 is secured to the front transverse stiffening rail 6 midway between the side edges of the car bed, the bracket having an arm 12 which extends vertically above the car bed, and an arm 13 which is at a right angle to the arm 12 and projects horizontally forward from the top of arm 12. A bearing 14 is carried at the forward end of bracket 11 to receive the pivot post 15 at the upper end of wheel fork 16. A thrust bearing 17 is interposed between the shoulders of fork 16 and bracket 11 to facilitate

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turning wheel 3 when the car is loaded. Fork 16 is straight so that the wheel axle is directly in line with the load thrust. To strengthen bracket 11 and, at the same time, to transfer the weight of the load on the forward corners of the bed to the center to prevent tipping under an uneven load, a brace 18 has its center portion fixed to arm 13 of bracket 11 just in back of bearing 14. The legs of brace 18 diverge downwardly and rearwardly and are attached to opposite sides of forward transverse stiffening rail 6. As much of the load strain upon the front wheel is transmitted through the forward transverse rail 6, one or more gussets 19 may be provided between the forward transverse rail and the bed plate. A yoke 20 is fixed to, or is an integral part of fork 16, and projects forwardly terminating in spaced ears 21. Any suitable draft device is hingedly connected to the ears 21, the type depending upon whether the car is to be manually drawn, pony drawn, etc. A handle 22 connected to ears 21 by pin 23 is illustrated as one such device.

The car of the present invention, due to the particular mounting of the wheels has a bed which is extremely low, it being just above the axle level. Its mobility and freedom from the restraints of traveling on tracks permits it to be taken to heretofore inaccessible places, as it can be moved anywhere and turned in its own length. It will be noted that the rear wheels are just back of the transverse center line of the bed so that most of the weight of the load is carried by the rear wheels permitting free steering movement of the front wheel. This design of car permits the use of rubber tired wheels eliminating the danger of explosion of mine gases from wheel sparks. It will also be noted that the straight fork 16 positions the ground engaging portion of wheel 3 directly below the pivot post 15, and turning movement of the wheel in steering will not move the wheel except to rotate it about the axis of post 15. In other words, the front wheel will not be shifted from its center line supporting position by actual movement to one side or the other of the center as would be the case if the fork was curved and the wheel axle removed from the plane of the axis of post 15.

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Although one practical embodiment of the invention has been disclosed herein, it will be understood that minor changes may be made from the exact structure shown within the scope of the appended claim.

What is claimed is:

In a mine car, a bed plate, pairs of longitudinally extending sills supporting said bed plate, wheel wells projecting upwardly above said bed plate positioned each between a pair of said sills, a wheel in each of said wheel wells, an axle to support each wheel, each axle having its ends supported by one pair of said pairs of sills with the axle extending between said pair, the plane of the axes of said axles being closely adjacent said bed plate; said wheel wells and said wheels being positioned close to but just to the rear of the transverse center line of said bed plate, a bracket extending upwardly and forwardly from the front edge of said bed plate and carrying a vertical bearing at its forward end, a wheel fork having a vertically extending pivot post to seat within said vertical bearing, a front wheel journaled in said wheel fork, said front wheel being so positioned in said wheel fork that the axis of said wheel intersects the downwardly projected axis of said pivot post, and a brace secured to said bracket near the front thereof adjacent said vertical bearing and extending downwardly and rearwardly to the two forward corners of said bed plate.

LUTHER W. SAGE,
HOWARD B. STANTON,
PAUL V. McCLANAHAN.

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